

Health Care Provider Fact Sheet

Disease Name

Alternate name(s)

Acronym

Disease Classification

Variants

Variant name

Symptom onset

Symptoms

Natural history without treatment

Natural history with treatment

Treatment

Emergency Medical Treatment

Physical phenotype

Inheritance

General population incidence

Ethnic differences

Missing Enzyme

MS/MS Profile

OMIM Link

Genetests Link

Support Group

Multiple Carboxylase Deficiency

Holocarboxylase Synthetase Deficiency; (Neonatal Form) Holocarboxylase Deficiency

MCD

Organic Acid Disorder

Neonatal Form

Multiple Carboxylase Deficiency, Neonatal Form

Anytime from birth to 15 months of age.

Infants generally present with food refusal, vomiting, breathing problems, hypotonia, seizures, and lethargy. Severe metabolic/lactic acidosis, organic aciduria, mild hyperammonemia and variable hypoglycemia can lead to coma and death if not treated. Survivors can have neurological damage. Patients may have skin rash and alopecia at later stages.

Repeated bouts of acidosis, skin rashes, failure to thrive, coma, developmental delay and death.

Children with holocarboxylase synthetase deficiency, treated with biotin have normal growth and development. However, some only partly respond to therapy and one has been reported to be unresponsive to biotin therapy.

Majority of cases respond readily to biotin supplementation. Biotin increases the functional activation of the carboxylase enzymes.

See sheet from American College of Medical Genetics (attached) or for more information, go to website: <http://www.acmg.net/StaticContent/ACT/C5-OH.pdf>

None

Autosomal recessive

1:87,000

No known population at increased risk

Holocarboxylase synthetase (HS) attaches biotin to the four carboxylase enzymes (pyruvate carboxylase; propionyl CoA carboxylase; beta-methylcrotonyl CoA carboxylase; acetyl CoA carboxylase) in order to activate them. Deficiency of HS results in functional deficiencies of all the carboxylase enzymes.

C3 (propionyl carnitine) – elevated
C5-OH (3-hydroxyisovaleryl carnitine) - elevated

www.ncbi.nlm.nih.gov/entrez/dispomim.cgi?id=210200

www.genetests.org

Organic Acidemia Association
www.oaanews.org

Save Babies through Screening Foundation
www.savebabies.org

Genetic Alliance
www.geneticalliance.org

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